



not to scale

Figure 2-11 Hydraulic Profile of Water Deliveries from the American River Pump Station

agreement, release of the replacement water would be contingent upon certain agreements with Pacific Gas and Electric Company (PG&E) and purchase of the water by a downstream entity. Arrangements related to these agreements are currently underway.

Dry years are defined as years when the projected March through November unimpaired inflow to Folsom Reservoir is less than 950,000 AF. The amount of replacement water released to the river is based on a linearly proportional amount with a maximum release of 27,000 AF when unimpaired inflow to Folsom Reservoir is at 400,000 AF. The Water Forum Agreement defines years when unimpaired inflow is less than 400,000 AF as conference years. In those years, PCWA and other Water Forum participants would meet to determine how the available water would be managed. The replacement water would be released for downstream use to meet environmental requirements and/or for use by other water purveyors, in accordance with their specific Water Forum agreements.

Facility Maintenance

Maintenance activities associated with the Project fall into three categories: basic; annual; and periodic or as needed. Basic maintenance includes daily visual inspection of the pump station and diversion structure to make sure they are operating properly. Annual maintenance includes seasonal inspection of the fish screen and diversion structures and removal of any objects that may interfere with proper operation of the diversion structure. Periodic, or as-needed, maintenance includes major maintenance activities such as inspections/removal of pump(s), clearing the river diversion inlet structure, and removal of any material that may be deposited against the diversion structure as a result of a major flood event.

Public River Access Maintenance

CDPR, through an agreement with Reclamation, would be responsible for maintaining the public river access features. Maintenance activities would include removal of trash and cleaning of restrooms on a regular basis; repair of damaged signs, as needed; and servicing of trails and access routes, as required. Road and trail maintenance may include regrading or placement of additional gravel on traveled surfaces, correction of erosion problems, clearing drainage ditches and culverts, and trimming of vegetation that encroaches upon the path, as needed.

2.2.3 UPSTREAM DIVERSION ALTERNATIVE

The Upstream Diversion Alternative would provide PCWA with a reliable, year-round diversion of its MFP water supply from the North Fork American River while alleviating Reclamation of its obligations to PCWA under the Land Purchase Agreement (Section 1.2.2). Additionally, the Upstream Diversion Alternative would provide the potential for future increased diversion capacity for PCWA as well as GDPUD (Section 1.3.6).

The major features that would be constructed for the Upstream Diversion Alternative include the water diversion/intake structures, including a fish screen to be designed in consultation with CDFG fish screen experts; water conveyance pipelines; a new pump station, placed above the 100-year flood level; all-weather access roads; power lines; and safety features. The Upstream

Diversion Alternative would site the diversion intake structure upstream of the bypass tunnel inlet. Locating the diversion upstream of the bypass tunnel would not require channel restoration or tunnel closure. The project area would remain closed to the public, except for authorized designated trail use. No additional public access facilities would be developed. The pump station location and associated facilities would be the same as proposed for the Proposed Project. These features are shown on Figure 2-8 and discussed below. The estimated cost for construction of the Upstream Diversion Alternative would be approximately \$17 million.

2.2.3.1 Major Features of the Upstream Diversion Alternative

Many of the major features and activities for the Upstream Diversion Alternative would be as described for the Proposed Project (Section 2.2.2.1). Those features that are different for the Upstream Diversion Alternative, as compared to the Proposed Project, are described below.

Diversion and Intake Structure

The diversion and intake structure would be constructed approximately 100 feet upstream of the bypass tunnel, on the north river bank (Figure 2-8). The diversion structure would be constructed from earth and rock and extend between a natural high point in the river gradient and the proposed intake structure. During low-flow periods, the structure would create a pool in the vicinity of the intake allowing continued water diversion. A V-notch weir would be installed immediately upstream of the diversion structure, parallel to river flow for hydraulic gradient control. The intake structure would be constructed out of concrete and constructed along the west riverbank.

Pipelines

A seven-foot diameter pipeline would extend approximately 490 feet between the intake structure and pump station.

Excavated Material Disposal

Construction of the Upstream Diversion Alternative would result in the excavation of approximately 72,000 cubic yards of material. Under this alternative, all excavated material would be placed in the pit at the base of the eastern side of the Auburn Dam keyway (Figure 2-8).

Safety Features

The water-based safety hazards of the bypass tunnel are described in Chapter 1.0. The Upstream Diversion Alternative would include the placement of additional signs and buoys with cables across the river channel upstream of the bypass tunnel to warn people from entering the tunnel. The buoy line would direct recreationists to a flat location on the riverbank to exit the water. In addition to this feature, as part of the diversion structure, a flat-water pool area would be created in front of the bypass tunnel to provide one more opportunity for boaters or swimmers to exit the

water rather than enter the tunnel. These features would reduce, but not eliminate, the potential safety hazard posed by the bypass tunnel.

2.2.3.2 Upstream Diversion Alternative Construction Schedule and Activities

Construction of the Upstream Diversion Alternative diversion intake structure, pump station, pipelines, roads, and associated activities would take approximately 21 months beginning in 2002 and ending by spring 2004. Table 2-5 shows the type and duration of construction equipment associated with construction of the Upstream Diversion Alternative.

Construction of the major project features would be similar to the methods described under the Proposed Project (Section 2.2.2.2), with the exception of treatment of the bypass tunnel and associated river restoration and public river access sites. Public river access sites would not be developed under the Upstream Diversion Alternative.

2.2.3.3 Upstream Diversion Alternative Operation and Maintenance

As described for the Proposed Project (Section 2.2.2.3), upon completion of construction and testing of the pump station facilities, Reclamation would transfer the ownership of the project facilities to PCWA. PCWA, in turn, would assume full responsibility for all operation, maintenance, and related activities for the project. The diversion amount and timing would be the same under the Upstream Diversion Alternative as described for the Proposed Project (Figure 2-7 and Table 2-6).

Overall, PCWA's operation and maintenance of the pump station facilities would be the same under the Upstream Diversion Alternative as described for the Proposed Project (Section 2.2.2.3).

2.3 ENVIRONMENTAL PROTECTION AND MITIGATION MEASURES

Implementation of the Proposed Project or alternatives would result in temporary construction-related impacts upon terrestrial resources, water quality, recreation activities, slope stability, ambient noise levels, air quality, and public health and worker safety. Additionally, operation and maintenance activities have the potential to affect wetlands vegetation and associated habitat, water quality, and cultural resources. Through the evaluation of potential impacts associated with the Proposed Project or Upstream Diversion Alternative, PCWA and Reclamation have identified several design considerations, features, practices, or plans that have been incorporated into the Mitigation Plan for the project (Appendix D to the Final EIS/EIR). The Mitigation Plan would be adopted by the lead agencies in accordance with regulatory requirements. The Mitigation Plan identifies compliance responsibilities, timing, documentation, responsible agency contacts, and reporting requirements to ensure that design and mitigation measures or other environmental commitments are successfully implemented.

Under the No Action/No Project Alternative, Reclamation would continue the annual installation of the seasonal pump station. Construction, operation, and maintenance-related impacts of the seasonal pump station activities would generally be the same as under the existing condition, with some exceptions, as noted in the analysis of Chapter 3.0. No formal environmental protection or mitigation measures have been identified for the No Action/No Project Alternative; however, it is assumed that Reclamation would continue to obtain the appropriate regulatory agency permits for the seasonal pump station and to implement appropriate terms and conditions to minimize environmental disturbances.

Construction activities would be conducted using standard BMPs to minimize environmental disturbances and impacts. The construction contractor would implement these measures with oversight by Reclamation, PCWA, and regulatory agencies, as appropriate. Reclamation, PCWA, and/or CDPR would be responsible for implementing operational and maintenance-related measures. PCWA and Reclamation, as the lead agencies for the project, would be responsible for ensuring compliance with the specific measures and related monitoring and reporting requirements.

In developing a final design, plans and construction specifications for project-specific construction-related environmental protection measures would be identified as the responsibility of the construction contractor to ensure environmental protection. The measures would be made part of the construction contract and would include provision for reporting and monitoring as appropriate for each measure.

The environmental protection measures identified and incorporated into the Action Alternatives' design, construction, implementation procedures, and ongoing management actions are identified below in **Table 2-7**. These measures are described in detail in the individual resource sections of Chapter 3.0 and in the Mitigation Plan (Appendix D to the Final EIS/EIR).

Table 2-7		
Environmental Protection and Mitigation Measures		
<i>Fish Resources and Aquatic Habitat</i>	3.1-1	Prevent Fish Entrainment and Impingement at the Water Supply Intake/Point of Diversion
	3.1-2	Avoid Impacts Upon Auburn Ravine Fish, Aquatic and Terrestrial (Riparian) Resources
<i>Terrestrial Resources</i>	3.2-1	Establish Buffer Zone to Avoid Disturbance of and Prevent the Permanent Loss of Riparian, Wetland and Pond Vegetation and Associated Habitat
	3.2-2	Minimize Impacts Upon State and Federal Special-Status Species in the Project Area
	3.2-3	Measures for Entrapped, Injured or Dead Special-Status Animal Species
	3.2-4	Restoration of Permanent Riparian, Wetland and Pond Vegetation/Habitat Loss

Table 2-7 (Continued) Environmental Protection and Mitigation Measures	
Water Quality	3.3-1 Removal of Construction Litter and Debris
	3.3-2 Construction-Related Water Quality Protection Measures
	3.3-3 Project Operation and Maintenance Water Quality Protection
	3.3-4 Minimize Water Quality Impacts From Increased Public Access
Recreation	3.4-1 Maintain Public Recreation Trail Access During Construction
	3.4-2 Avoid Recreation Trail Closures That Affect the Western States Endurance Run, Tevis Cup Western States Trail Ride or the American River 50-Mile Endurance Run
	3.4-3 Auburn-to-Cool Trail
	3.4-4 Minimize Trail User Conflicts Due to Increased Public Access
	3.4-5 Minimize Littering at Public River Access Locations
	3.4-6 Provide Disabled Access Parking Area
Visual Resources	3.5-1 Blend Project Features with Surrounding Landscape
Cultural Resources	3.6-1 Stop Construction Activities if Cultural Resources or Human Remains are Uncovered
	3.6-2 Develop and Implement Programmatic Agreement with State Historic Preservation Officer Regarding Potential Impacts at Shasta Reservoir
Transportation and Circulation	3.7-1 Develop and Implement a Construction Traffic Access Management Plan
	3.7-2 Provide Information Regarding New Public River Access
Air Quality	3.8-1 Minimize Ozone Precursor Emissions During Project Construction
	3.8-2 Minimize PM ₁₀ Emissions During Project Construction
	3.8-3 Minimize Potential for Disturbance of Asbestos and Exposure of Construction Personnel or General Public During Project Construction
Noise	3.9-1 Minimize Noise During Project Construction
	3.9-2 Minimize Operational Noise Levels by Enclosing Pumps
	3.9-3 Minimize Noise Levels Associated With Public Use of River Access Features
Public Health and Worker Safety	3.10-1 Minimize the Potential for Increased Erosion and Slope Instability During Project Construction
	3.10-2 Minimize Potential for Increased Exposure to Hazardous Materials or Fire Risk During Project Construction
	3.10-3 Remove All Construction-related Materials From Project Site Prior to Opening for Public Use
	3.10-4 Minimize the Risk of Public Exposure to Fire Hazards During Project Operations
	3.10-5 Prevent Vehicular Access in Undesignated Areas
	3.10-6 Minimize Inappropriate or Illegal Activities at Public River Access Locations
	3.10-7 Limit Public Access to Water Supply Facilities and Structures

2.4 SUMMARY OF THE ALTERNATIVES AND IMPACTS

The Executive Summary to the Final EIS/EIR, Table S-5, provides a summary of impacts identified in this EIS/EIR organized by resource topic and presents the results of the assessment of potential environmental impacts and mitigation measures of the Proposed Project and alternatives. Environmental impacts are grouped as either Facilities-Related Impacts or Diversion-Related Impacts. Facilities-related impacts are typically land-based and described as the direct, short- and long-term effects of constructing, operating and maintaining the facilities associated with each alternative. These effects generally are limited in geographic scope to the immediate project site footprint and, for some topics, portions of nearby communities. Diversion-related impacts are the direct, long-term water resource-based effects associated with PCWA's operation of a year-round pump station project and the associated increased diversion of MFP water rights water from the North Fork American River near Auburn, and the indirect, long-term effects associated with Reclamation's operation of certain CVP system facilities. Throughout the table, Cumulative Condition refers to the cumulative potential effects resulting from several reasonably foreseeable federal actions that over the next 25 years, would result in substantial changes in the CVP system operations and an increase of American River or Sacramento diversions for M&I and agricultural water supplies for use in the American River Basin. This includes providing increased water supplies to the lands within the service boundaries of water purveyors and includes lands within Placer, El Dorado, Sacramento, Alameda and Costa Contra counties impacts to environmental resources that could result from the collective actions associated with future planned urbanization.

The environmental setting and potential consequences of implementation of the Proposed Project and alternatives are presented and analyzed in detail in Chapter 3.0.

The No Action/No Project Alternative refers to continued installation of the seasonal pump station, as described in Section 2.2.1. The use of the term "Action Alternatives" in Table S-5 refers to an evaluation that applies to both the Mid-Channel Diversion and Upstream Diversion alternatives, where the consequences of either action would generally be the same. The Proposed Project is the Mid-Channel Diversion Alternative, as described in Section 2.2.2. The Upstream Diversion Alternative is described in Section 2.2.3.

The impact summaries are presented in comparison to both existing conditions and to the No Action/No Project Alternative to satisfy both CEQA and NEPA requirements. Additionally, an evaluation of the Cumulative Condition and the Action Alternatives' Incremental Contribution to the Cumulative Condition is provided. The Cumulative Condition represents a future scenario considering the timeframe of the Proposed Project and other local or regional projects that would have similar environmental effects within the project study area over the next 25 years. Assumptions regarding future probable actions within the regional and local areas of study were developed and are described in greater detail in Chapter 3.0, Section 3.3, Impact Assessment Framework and Methodology.

The American River Basin Cumulative Report (Appendix D to the Draft EIS/EIR) evaluates Reclamation's reasonably foreseeable CVP American River Division actions that, over the cumulative study period (2000 to 2025) potentially would result in substantial changes to CVP

system operations and increased diversion from the American and Sacramento river basins for M&I and agricultural water uses within the American River Basin. This includes providing increased water supplies to the lands within the service area boundaries of water purveyors and includes Placer, El Dorado, Sacramento, Alameda, and Contra Costa counties. The Cumulative Report evaluation includes an assessment of potential water service area impacts upon terrestrial and other land resources within the regional study area. Refer to Appendix D of the Draft EIS/EIR for additional detailed information.

2.5 ALTERNATIVES CONSIDERED AND ELIMINATED

Table 2-8 summarizes alternatives considered and eliminated from further analysis. Potential alternatives were eliminated based on two primary criteria: (1) the alternative did not meet most of the project objectives; and/or (2) the alternative was technically, economically, or environmentally infeasible.

Table 2-8 Summary of Alternatives Considered and Eliminated from Further Analysis	
Alternative	Reason for Elimination
Diversion Location <ul style="list-style-type: none"> <input type="checkbox"/> Diversion from an Auburn Reservoir/Dam <input type="checkbox"/> Bypass tunnel diversion variations using an underground intake tunnel or an intake pipe <input type="checkbox"/> Diversion from the western bank of the dewatered channel, approximately 3,200 feet downstream of the bypass tunnel inlet <input type="checkbox"/> Diversion from a point upstream of the Auburn Dam construction site near Tamaroo Bar <input type="checkbox"/> Sites other than Folsom Dam or Auburn Dam <input type="checkbox"/> Diversion from Folsom Reservoir at various locations 	<ul style="list-style-type: none"> <input type="checkbox"/> Could not be completed within timeframe to meet PCWA's water supply needs. <input type="checkbox"/> Economically and technically infeasible. Confined access to the intake structure could create safety hazards for maintenance personnel. <input type="checkbox"/> No environmental advantage. Wider channel reach would require larger in-river gradient structures and potentially less control of diversion flows; potentially higher sediment load and greater maintenance requirements. <input type="checkbox"/> No environmental advantage. Nearly 8,000 feet of discharge pipeline would be needed for this alternative; site access would be more difficult. <input type="checkbox"/> Economically infeasible. Additional costs make alternate location impractical. <input type="checkbox"/> Economically infeasible; no environmental advantage. Excessively high costs for new pump station, intermediate booster pumps and pipeline.
Pump Station Location <ul style="list-style-type: none"> <input type="checkbox"/> Location on the western canyon wall, at elevation 705, down slope from the Auburn Ravine Tunnel <input type="checkbox"/> Location on top of the existing easterly remnant of the cofferdam at elevation 720, above the bypass tunnel <input type="checkbox"/> Location above Tamaroo Bar 	<ul style="list-style-type: none"> <input type="checkbox"/> Technically infeasible. This location has many spoil materials from construction of the Auburn Ravine Tunnel that could prove unstable. <input type="checkbox"/> Technically infeasible. Access to the site is difficult, and the pump station configuration for this site could lead to operational problems for pump equipment and would make maintenance difficult. <input type="checkbox"/> No environmental advantage. Site access would be difficult and could present operational or maintenance difficulties.

Table 2-8 (Continued) Summary of Alternatives Considered and Eliminated from Further Analysis	
Alternative	Reason for Elimination
Pump Type <ul style="list-style-type: none"> <input type="checkbox"/> Submersible Pumps – Non-Clog, Deep Well, or Dry Pit Centrifugal <input type="checkbox"/> Vertical Mixed Flow Propeller 	<ul style="list-style-type: none"> <input type="checkbox"/> No environmental advantage. These types of pumps are more costly than the selected pump type and have no environmental advantage. <input type="checkbox"/> Technically infeasible. This type of pump could not generate the lift necessary to move water from the intake to the Auburn Ravine Tunnel.
Safety Features <ul style="list-style-type: none"> <input type="checkbox"/> Create grated or fenced closure of the bypass tunnel inlet and outlet <input type="checkbox"/> Excavate debris downstream of the tunnel to lower the tailwater on the bypass tunnel 	<ul style="list-style-type: none"> <input type="checkbox"/> Technically infeasible; no environmental advantage. This could increase the safety hazard. During most flows, people and boats could become trapped against the grate/fence. It would be difficult to keep the structure free of debris. <input type="checkbox"/> No environmental advantage. Risk of becoming trapped in the tunnel is not completely removed.
Other Water Supply Considerations <ul style="list-style-type: none"> <input type="checkbox"/> Reduce water demand through conservation metering <input type="checkbox"/> Reduce water demand through aggressive fixture (shower head, toilet) replacement <input type="checkbox"/> Purchase replacement water from another source; including surplus water from neighboring districts <input type="checkbox"/> Land fallowing or land retirement <input type="checkbox"/> Use surplus Zone 3 contract supply <input type="checkbox"/> Pump groundwater <input type="checkbox"/> Use reclaimed water from City of Lincoln Wastewater Treatment Plant <input type="checkbox"/> Reduce water system losses <input type="checkbox"/> Improve efficiency of water delivery system (pre- and post-customer delivery (e.g., pipe canals, increase raw water connection charges, restrict the maximum purchase amount, increase raw water rates for certain uses or for large quantities, provide technical assistance to customers regarding efficient water use)) 	<ul style="list-style-type: none"> <input type="checkbox"/> Inapplicable. PCWA already implements 100 percent metering. <input type="checkbox"/> Does not meet most of project objectives. Limited potential for demand reduction. Not a reliable short- or long-term solution. <input type="checkbox"/> Does not meet most of project objectives. Not a reliable (continuous) source of supply. Additionally, there are few available sources, lack of delivery systems, and would be costly to develop. <input type="checkbox"/> Excessive economic, social and environmental impacts because land converted from agricultural land would likely be converted for urban development, would represent a loss of open space and habitat (and, potentially endangered species habitat), and would displace farmers economically and socially. <input type="checkbox"/> Does not meet most of project objectives. Not a reliable (continuous) source of supply. <input type="checkbox"/> Does not meet most of project objectives. Not a reliable (long-term) source of supply. <input type="checkbox"/> Does not meet most of project objectives. Not a short-term source of supply, and volume would be insufficient. <input type="checkbox"/> Does not meet most of project objectives. Not a reliable (continuous) source of supply. <input type="checkbox"/> Does not meet most of project objectives. Not a short-term source of supply, and volume would be insufficient.
Sources: MW et al. 1998; Reclamation 2000	

2.6 PERMITS AND APPROVALS

Several laws and regulations that apply to the project require permits. Agencies and related permits or other environmental requirements are identified in **Table 2-9**. Final permitting requirements for the project were determined through agency review of the Draft EIS/EIR and other agency procedures.

Table 2-9 Anticipated Permits and Approvals for the Proposed Project	
Agency	Permit or Other Environmental Requirements
California Department of Fish and Game	California Endangered Species Act [Fish and Game Code Section 2050 et. seq.] ^a Streambed Alteration Agreement (FGC S. 1601 et seq.) ^b
State Water Resources Control Board	Board approval to grant change in point of diversion under Water Rights Permits 13856 and 13858
Regional Water Quality Control Board	NPDES General Permit for Stormwater Discharges [Section 401 Water Quality Certification], [Section 402 Clean Water Act (33 U.S.C. § 1344)] ^b
U.S. Army Corps of Engineers	Section 10 of River and Harbor Act [33 U.S.C. 401-413] ^a Section 404 of Clean Water Act Nationwide Permit No. 27 [33 U.S.C. 1251 et seq.] ^a
U.S. Fish and Wildlife Service	ESA Section 7 requirements for fish, wildlife, and plants [PL 93-205; 16 U.S.C. § 1536] Biological Opinion and Incidental Take Permit ^a Fish and Wildlife Coordination Act [P.L. 85-624; 16 CFR § 661-667] ^a Fish and Wildlife Coordination Act Report
National Marine Fisheries Service	ESA Section 7 requirements for fish, wildlife, and plants [PL 93-205; 16 U.S.C. § 1536] Biological Opinion and Incidental Take Permit ^a Magnuson-Stevens Fishery Conservation and Management Act. Consultation regarding potential project effects upon Essential Fish Habitat
Office of Historic Preservation	Reviews project for possible impacts to state and federal registered historical resources [Section 106 of the National Historic Preservation Act] ^b Programmatic Agreement regarding mitigation of potential effects to unknown cultural resources.
^a Permits or approvals that are expected to be required. ^b Permits or approvals that could be required depending on final project design, construction methods, and other considerations.	

Since publication of the Draft EIS/EIR, it has been determined that some of the permits preliminarily identified in the Draft EIS/EIR would not be required as a condition of project implementation. A Land Use Lease has been removed from Table 2-9 because the project area does not fall under the jurisdiction of the State Lands Commission pursuant to Section 6327 of the Public Resources Code which states that if a facility is for the “procurement of freshwater

from and construction of drainage facilities into navigable rivers, streams, lakes and bays,” and if the applicant obtains a permit from the local reclamation district, the Reclamation Board, Department of Water Resources, the California Debris Commission, or the Corps of Engineers of the United States, then an application is not required by the State Lands Commission. Similarly, according to the El Dorado County Grading Ordinance (Ordinance 3983), an El Dorado County Grading Permit is not required if the project is carried out by a public agency and/or the project is on federal land. Additionally, the project no longer foresees the need for a Placer County Air Pollution Control District Permit to Operate (Generator), as the design engineers have indicated that a diesel generator would not be used as part of the construction or operation of the alternatives.